1. (Three Times Amended) A magnetic recording system including a head, a magnetic media with perpendicular magnetic polarity transitions written thereon and circuitry adapted to receive a readback pulse with a substantially Lorentzian pulse shape from said head and to detect said substantially Lorentzian pulse shape, said head for transferring data between the magnetic media and an exterior environment, said head comprising:

a write element for inducing said perpendicular magnetic polarity transitions into a surface of said magnetic media during a write operation;

a yoke [disposed within said write element, said yoke] having a read gap for sensing said perpendicular magnetic polarity transitions; and

a magnetoresistive read element mounted in a flux flow path of said yoke, wherein said magnetoresistive read element produces a readback pulse having a substantially Lorentzian pulse shape in response to one of said perpendicular magnetic polarity transitions.

17. (Twice Amended) A magnetic storage device comprising:

a magnetic media having magnetic polarity transitions perpendicularly recorded thereon;

a read element for reading said perpendicular magnetic polarity transitions, said read element including:

a flux guide having a read gap, said read gap used for sensing said perpendicular magnetic polarity transitions and for producing a magnetic flux in said flux guide in response to each of said perpendicular magnetic polarity transitions, and

a magnetoresistive element mounted in said flux guide for producing a readback pulse having a substantially Lorentzian pulse shape in response to said magnetic flux; and

circuitry adapted to receive a readback pulse having a substantially Lorentzian pulse shape from said magnetoresistive element and to detect that said readback pulse has said substantially Lorentzian pulse shape.

30. (Amended) A magnetic storage device comprising:

a magnetic storage media;

a head including a write element for inducing perpendicular magnetic polarity transitions in said magnetic storage media during a write operation, a yoke, and a magnetoresistive read element mounted in a flux flow path of said yoke and recessed from said magnetic storage media for producing readback pulses with substantially Lorentzian pulse shapes in response to and in one-to-one correspondence with said perpendicular magnetic polarity transitions during a read operation; and

circuitry adapted for receiving readback pulses with substantially Lorentzian pulse shapes from said magnetoresistive read element, wherein said circuitry includes a detector designed to detect Lorentzian pulse shapes.

34. (Amended) The magnetic storage device, as claimed in Claim 30, wherein said [circuitry includes a] detector includes means for detecting [designed to detect] Lorentzian pulse shapes.

Claims 35-41, line 1, change "34" to --30--.